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ON AGROSAURUS MACGILLIVRAYI.

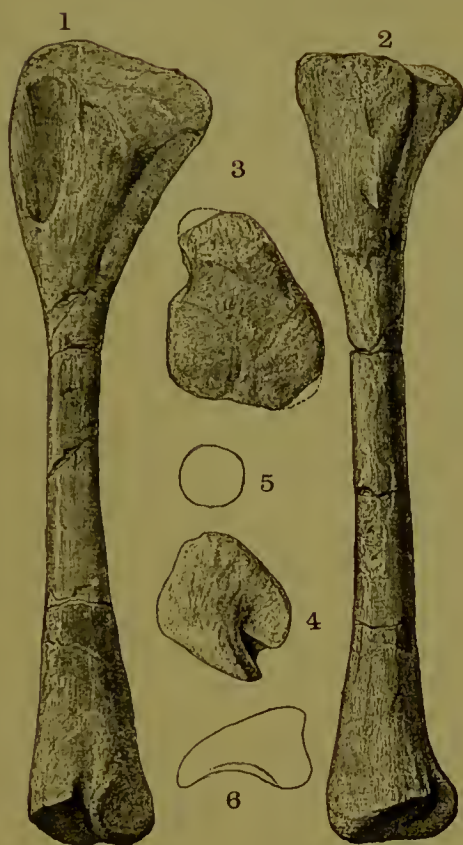
*On AGROSAURUS MACGILLIVRAYI (Seeley), a SAURISCHIAN REPTILE *
from the N.E. COAST of AUSTRALIA. By Professor H. G. SEELEY,
F.R.S., F.G.S.*

IN July 1879 the Geological Department of the British Museum obtained by purchase from Mr. E. Charlesworth some fossil bones, which were dispersed at the sale of the collection of Mr. S. L. Waring, F.G.S., of Norwood, then recently deceased. They are labelled, in a small, delicate handwriting, "'Fly,' 1844. Jn. Macgillivray, from the N.E. coast of Australia." I believe this to indicate that the specimens were collected by Mr. Macgillivray during the voyage of the 'Fly,' from some locality which was then unnamed. The bones were placed in the Mammal Gallery, where they have since remained. They comprise a complete left tibia, a less perfect proximal end of the corresponding right tibia, a fragment which I regard as a portion of a fibula, attached to matrix, which besides other fragments of bone contains two laterally compressed claw-phalanges. There is necessarily no direct evidence of their geological age. But as they indicate a new Saurischian reptile, which has its nearest known allies in the lower Secondary rocks of Europe and the Trias of South Africa, it is not improbable that the animal belongs to the Lower Oolites or Trias. I have not noticed any reference to the specimens by Professor Jukes in the "Voyage of the 'Fly'" or in his other books and papers, or in the writings of Mr. Macgillivray.

The left tibia (figs. 1, 2) is about 20 cm. in extreme length, with the usual sub-triangular flattened proximal articular surface. That surface is nearly 5 cm. deep by 4 cm. wide posteriorly, and is flattened on the hinder and fibular borders, which are inclined at a right angle, and convex on the antero-internal contour, so that a distinct thick anterior crest is defined without obliterating the right-angled triangle form. The articular surface is slightly inclined towards the posterior and fibular borders, partly because there is a small patelloid convexity above the pre-enemial crest, then a transverse concavity, behind which is the larger part of the articulation, consisting of two areas which correspond to condyles. These surfaces are divided by a shallow groove, and the larger condyle was on the external border. The posterior angles of these condylar surfaces are rounded and prolonged backward beyond the shaft, and there is a slight concavity between them.

The proximal end of the bone is expanded as compared with the unusually slender sub-cylindrical shaft, which is 12 millim. in diameter. The anterior internal surface, though flattened, is gently convex, and it rounds into the posterior surface of the bone, as well as on to the strong anterior convex ridge of the pre-enemial crest, which is prolonged down the shaft for about 6 cm. with a gently convex

* See Proc. Roy. Soc. vol. xliii. p. 165, and Quart. Journ. Geol. Soc. vol. xlv. (1888) p. 79.



EXPLANATION OF FIGURES.

Agrosaurus Macgillivrayi (Seeley).

$\frac{1}{2}$ natural size.

Fig. 1. Left tibia—fibular aspect, showing expansion of the ends of the bones.

Fig. 2. Left tibia—anterior aspect, with lateral notch for the astragalus.

Fig. 3. Proximal articulation, showing impress of condyles of femur.

Fig. 4. Distal articulation, showing distinctive quadrate form and attachment for astragalus.

Fig. 5. Section of shaft, showing its cylindrical form.

Fig. 6. Claw phalange.



contour. The width proximally of the antero-internal surface is about 5 cm., but it narrows rapidly. The posterior contour of the shaft is concave.

The surface of the bone at the proximal end is moderately concave, with a slight vertical channel for the fibula towards the external crest. This is augmented by crushing, in the left tibia, but the imperfect proximal end of the right tibia shows no *post-mortem* compression.

The slender portion of the shaft includes more than its middle third, and is more attenuated than in any Saurischian hitherto figured. Its section is ovate, and the bone appears to be thin and hollow.

The distal end expands gradually, so that there is no point in which it is sharply defined from the shaft; it is about half as deep as the proximal end. The articular surface is more quadrate than the distal end of any Saurischian tibia figured, with the exception of *Dimodossaurus poligniensis*, in which the proportions are similar. It is 3 cm. wide, and measures rather more in depth, with two pairs of sides nearly parallel, though the lateral borders converge a little forward. A deep notch indents the anterior margin in the middle, and marks a division of the basal surface which descends on the fibular side like a broad talon and indicates a corresponding modification of the astragalus. I infer from the quadrate shape of the articulation that the distal end of the fibula was carried external to the tibia, and not in front of it as in Ornithischia, which have the distal end of the tibia expanded transversely. The somewhat saddle-shaped articular surface is clean, and gives no indication of close union with the astragalus.

Another fragment may be the distal end of the fibula; it is less than 5 cm. long, with a slender shaft 1 cm. in diameter as preserved. The articular surface is oblique, flattened, and measures 2.5 cm. in width by 1.8 cm. in depth; it is convex on the tibial side, and less convex externally.

A fracture in the matrix displays two claws, which are flattened and appear to be compressed from side to side. They are of the type which is usual in carnivorous reptiles. The larger of them is 2.5 cm. long and 1.8 cm. deep at the slightly concave articular border: the contour of the bone is convex above and concave below. The smaller claw is more slender; it is 2 cm. long, and 1.3 cm. deep at the posterior articulation.

The distinctive character which determines the affinities of the fossil is the distal end of the tibia. It shows an ordinal resemblance with *Pekilopleuron* and *Cetiosaurus*, but with *Dimodossaurus* from the top of the Keuper its resemblance is so close that the two must be regarded as nearly allied. I consider the fossil now described as generically distinct from *Massospondylus* and all known types, and defined by its slender shaft, by the enlarged proximal end which curves backward, by the slight development of the external crest, by the uniform increase in size of the distal end, and finally by the moderate excavation of the distal articulation on the inner side. The remains indicate an animal about as large as a sheep.

DISCUSSION ON THE TWO PAPERS.

Mr. LYDEKKER agreed with the Author in regarding the Australian tibia as that of a Dinosaur, but asked how it was generically distinguished from *Dimodosaurus* or *Massospondylus*. He was glad that the Author termed the bone from Elgin a somewhat unsatisfactory specimen: in the speaker's opinion it was not worthy of being made the type of a genus. He differed from the Author in regarding the bone as being solid, and expressed his belief that although it might belong to a Rhynchocephalian or an extremely generalized Chelonian, it was certainly not Crocodilian, in any accepted sense of that term. He further enquired the Author's meaning in using the expression "Lacertilian affinities" in an apparently loose way. He concluded by protesting against the use of the term "Saurischia" for the typical Dinosauria. It was perfectly permissible to divide the Dinosauria into two orders, but if this was done the original name must be retained for the typical forms. An analogous instance occurs in the separation by some writers of the Lemuroidea from the Primates, the latter being retained for the typical members of the order. Any other course would be unjustifiable.

The AUTHOR thought that if Mr. Lydekker visited Paris and sought the aid of Prof. Gaudry in making comparisons, he might learn the nature of *Dimodosaurus* and the relation of the Australian fossil now described to that type and its allies. He used the term "Saurischia" rather than "Dinosauria" in defining the position of this animal, because new ideas in classification needed new names for their adequate expression. It might be that the groups Ornithischia and Saurischia were provisional, for there were indications of a third group which could not be defined as yet. He thought there could be no more justification for the proposal to restrict the name "Dinosauria" to one of these groups than there would be to restrict the term "Mammalia" to the Monotremata or Marsupialia.

With regard to the Linksfield fossil, he had carefully compared it with every available specimen in the British Museum without finding evidence of near affinity with the Chelonian, though without doubt as to its osteological identification. This was the first necessity in making a determination of the bone. As Mr. Lydekker had been unable to determine whether the bone was a humerus or a femur, he did not know how it was possible for him to have arrived at any reference of it to the Chelonian or any other group. But when the form of the distal end was appreciated as fixing its place in the skeleton, it followed that only in Crocodiles and Ornithosaurs could any parallel be found to the characters of the proximal end, so as to bring it into harmony with the distal end of the bone. He fully admitted the difficulty in restoring the head of the bone in a new type of animal.